

Drawings

1. Replacement Fig 3 has the reference character 19 removed. Applicant has included corresponding corrections to specification under "Reference Numerals In Drawings" which has the reference numeral 19 removed. The Fig 3 description uses reference numeral 14 and is unchanged and replacement sheets are labeled "replacement sheet".
2. Fig 3 has had the drawing lines darkened to clarify that reference character 12 indicates both the protrusion of the thigh section frame 3 as well as the protrusion of the pivot fixture 10 and replacement sheets are labeled "replacement sheet".
- 3./4. Drawing reference characters 3 and 2 have been corrected and replacement sheets are labeled "replacement sheet".
5. Reference character 17 representing 17 linear actuator is changed to:
17A thigh calve and knee linear actuator
17BK back section linear actuator
17B buttocks section linear actuator
17CT coplanar calve/thigh section linear actuator
17K knee linear actuator
17L lumbar linear actuator

Applicant has included corresponding corrections to specification under "Reference Numerals In Drawings" and replacement sheets are labeled "replacement sheet". The 17BK back section linear actuator is composed of parts 33, 34, 35, 36, 37, 38, 39, and 40 as shown in Fig 13. Applicant is uncertain how to label this in the drawing without having 2 reference numerals for the same part. Applicant requests assistance for this as well as requests that examiner refers to Fig XX rather than page number to avoid confusion.

Linear actuators are well known by persons skilled in the art as devices that move or actuate an object or mechanical part by expanding in a straight length or line and are typically have clevises at both ends. They may be pneumatic cylinders but in bed applications they are typically enclosed threaded rods driven by electric motors. The force, distance and speed are selected for the particular operation to be performed. The application or mechanical configuration is the significant design criteria which is explained by the drawing and description, just as a bolt or motor is well known but it's application is the significant design criteria. There is no relationship between the linear actuators. They simply expand and contract independent of each other, moving the connected mechanism. The bed is shaped to the desired position by an up/down button on a remote for each actuator which moves each section of the bed and is well known among adjustable bed users. The remotes are shown and their use described in Fig 28A-F and in the Operation. The most common bed positions are shown at their ultimate limiting position and any position in between is obtained by stopping the linear actuator.

The linear actuator of Fig 13 is slightly different than the others in that it does not have a cover over the threaded rod. It is described in detail in the Fig 13 description, being made of the components of linear actuator drive motor 40, and threaded rod 33 which is an open thread linear actuator which allows disengagement of the nut 35.

Regardless, the applicant has clarified the drawings and specification to distinguish each linear actuator and has included the name of each actuator in the claims.

CORRECTIONS TO SPECIFICATION :

Applicant proposes the following amendments to clarify the specification:

Reference Numerals In Drawings

1 back section

2 buttocks section

3 thigh section

4 calves section

5 carriage

6 wheel

7 track

8 mattress

9 frame

10 pivot fixture

11 transfer link

12 projection

13 stop
14 connecting bar
15 lock spring
16 lower transfer link pivot
17 ~~linear actuator~~
17A thigh calve and knee linear actuator
17BK back section linear actuator comprising parts 33, 34, 35, 36, 37, 38, 39, and 40 as shown in Fig 13
17B buttocks section linear actuator
17CT coplanar calve/thigh section linear actuator
17K knee linear actuator
17L lumbar linear actuator
18 foot end pivot
19 ~~connecting bar~~

Detailed Description

In reference to Fig 3;

... While thigh section 3 and calves section 4 are inclined below horizontal, the force of footward motion of the ~~linear actuator~~ 17 thigh calve and knee linear actuator 17A on the lower pivot point 16 of transfer link 11 results in... Further footward motion of the ~~linear actuator~~ 17 thigh calve and knee linear actuator 17A results....

In reference to Fig 7;

... The lower transfer link pivot 16 is disposed along pivot fixture 10 so that the ~~linear actuator~~ 17 thigh calve and knee linear actuator 17A (for the thigh section 3 and calves section 2 4 which remains inactivated) and buttocks section 2 form....

In reference to Fig 8

... The buttocks section 2 can be can be tilted at any position along track 7 as the ~~linear actuator~~ 17 buttocks section linear actuator 17B for the buttocks section 2 reclining...

... crossbar 29 which is pivoted about carriage 5 when ~~linear actuator~~ 17 buttocks section linear actuator 17B is retracted....

In reference to Fig 13

Fig 13 - shows the carriage linear actuator 17 mechanism or back section

linear actuator BK comprising parts 33, 34, 35, 36, 37, 38, 39, and 40 for back section reclining....

In reference to Fig 24

Fig 24 -- shows a powered back arch support 68 with linear actuator 17 lumbar linear actuator 17L.

In reference to Fig 32

...The control of linear actuators 17 coplanar calve/thigh section linear actuator 17CT and knee linear actuator 17K ...include attachment points for the linear actuators 17 coplanar calve/thigh section linear actuator 17CT and knee linear actuator 17K.

In reference to Fig 28A;

A sensible shape identification control switch for a reclining bed where the control is permanently mounted or hand held, whether the control housing or switch arm 92 has the protrusion 91 represents the pillow or head of a person to sensibly identify the switch for the back section and at the same time identify the orientation of the switch, which in turn identifies the calve/ thigh section as not having the head, and in the case of this bed, the buttocks section in the middle. The switch arm 92 is pivoted at the pivot point 93 to which the rotation on the switch arm 92 would correspond to the movement of the back section or calves section thigh section reclining direction. Rotating the switch arm in the protrusion direction about the pivot point 93 to which the rotation on the switch arm 92 would correspond to the movement of the back section 1 or calves section 4/ thigh section 3 reclining direction would cause rotation of the represented section to recline pivotably in an upward direction by causing the linear actuator, which moves that section, to extend or retract until switch arm is released or section limit switch for maximum recline was reached by the section. Rotating the switch arm in the protrusion direction about the pivot point 93 would cause rotation of the represented section to recline pivotably in an upward direction by causing the linear actuator, which moves that section, to extend or retract until switch arm is released or section limit switch for maximum recline was reached by the section.

The button 95 on the protrusion side would correspond to the upward rotation of the section. The calves section and thigh section are operated by the same switch throughout the rotation about the thigh section from feet elevated past horizontal to coplanar calves section and thigh section (leg section) down.

The back arch support button out 97 and back arch support button in 98 would operate the back arch support mechanism 68.

Response to Office Action 35 U.S.C. 102 Claim Rejection;

Claims 107,110,118,125 have been rejected under 35 USC 102 as being anticipated by Japanese document 005. It is the Examiner's position that the document discloses a multi-position reclining bed having the elements of the applicant's claimed bed. Applicant respectfully disagrees.

005 is not a bed but a dental or surgical table. The width is too narrow for a sleeping surface, not allowing a person to roll from side to back to other side. The applicant's limitation of claim 107 or new claim 129 "a multi-position reclining bed" distinguishes over 005's surgical table / dentist chair.

There is no mattress that rests upon this table and surface of his buttocks section 6 is concave, with gaps between sections, which will not produce a horizontal nor flat sleeping surface when the sections are all horizontal. The entire structure is elevated to table height for surgical procedure, unlike a bed that is at sitting height for ease of entrance and exiting. The surgical table would require a stepping stool to climb up to sit on the surface of this table which is at table height even without a 6 to 12 inch thick mattress. The

applicant's limitation "107 d) a mattress rests on supporting elements" distinguishes over 005's surgical table.

005 has a connecting bar 40 fastened to the wall which would cause the chair to roll footward on wheels 39 when back section is lowered. Applicant's claimed limitation of "a horizontally situated elongated track" distinguishes over 005 wheeled chair.

10. Claim 126. "The multi-position reclining bed of claim 107, further comprising a powered mechanism located behind the back section, that is capable of causing a protrusion of the back section of the mattress. Johnston does not show a power lumbar support that forms an arched in the surface of the back section of the mattress. His linear actuator 50 and 52 lower and raise the back section 3.

Johnston does not show armrests that swing horizontally above the surface of the bed. Applicants limitation "wherein said swing arm is attached to said supporting elements and said arm rests are attached to said swing arm and wherein said swing arm can swing over said mattress and side of said mattress"

of claim 140 clearly distinguish over Johnston's 2 separate swing arms having two independent armrests that swing pivotably in a vertical plane

(unlike applicant's horizontally swing) and which cannot swing over his mattress.

The applicant's invention allows a person to rest both elbows and forearms on armrests in order to support their body weight as they maneuver themselves out of bed and provide a stabilizing support when coming to a standing position and Johnston is not able to perform this task. Johnston's 2 side safety bars that swing in are clearly not arm rests as they have no support pads and are not designed to support the patient's body weight.

Claim Rejections-35 USC 103

12. 108-109 111, 120,121,122 in reference to 005 in view of Miller. 005 does not lack a pivot fixture (cantilever mechanism) since his calves and thigh sections already has sufficient clearance to drop between the supporting frame members 5 which lie on the outside the width of the sections as seen in his figures 2 and 3. Fig 1 shows the linear actuator for the calves section below the top portion of the frame thus between the outside supporting frame members 5. Therefore 005 is complete in itself to drop calve thigh sections below the horizontal plane of the sections, and does not require the combination with Millar to provide a means to support the thigh / calves section in a coplanar position while pivoting downward below the horizontal plane of the bed.

005 has a connecting bar 40 fastened to the wall which would cause the chair to roll footward on wheels 39 when back section is lowered, again not requiring combining with Millar to provide a means to support the thigh / calves section in a coplanar position while pivoting downward below the horizontal plane of the bed.

13. Claims 108-109, 111, 120, 121, 122 are rejected under 35 USC 103(a) as being unpatentable over 005 in view of Zur.

Zur does not have armrests (plural ie more than 1) but a single table that swings across. Applicant has added the limitation to "arm rests" swing arm to obviate over Zur's table. New claim 140 reads "wherein said swing arm is attached to said supporting elements and said arm rests are attached to said swing arm and wherein said swing arm can swing over said mattress and side of said mattress. Applicant's limitation arm rests (plural) require both arm rests to be attached to the same swing arm, unlike Zur's table which provides a single arm rest.

The applicant's invention allows a person to rest both elbows and forearms on armrests in order to support their body weight as they maneuver themselves out of bed and provide a stabilizing support when coming to a standing position. Zur's table is not able to perform this task.

14. Claim 120 (not 119) rejected under 35 USC 103 a) over 005 in view of Roberts and Reeder is respectfully disagreed by applicant since they both teach interchangeable components in mattresses and do not try to manipulate their mattress on an adjustable bed. Their mattresses do not function on adjustable beds. The applicant teaches allowing the bottom surface of the back section of the mattress to slip along the back section of the base as it is be reclined by adding a fabric with a low coefficient of friction on one of the two surfaces.

Roberts shows an anti-slip material inside the mattress in Fig 48 but does suggest it used to manipulate slippage on the adjustable base. Part 100 is a foam insert to be selected for firmness or softness of that area of the mattress.

Reeder has a "top cover 60 is made from a material having a low coefficient of friction such as polypropylene anti-shear to allow for the sliding movement of pillow top 90 relative to top cover 60 near head end 46 of mattress 52." The top cover 60 and is located below the pillow top 90 on the inside of the mattress. The pillow top 90 is the top surface of the mattress. Applicant's low coefficient of friction is on the outside of the mattress clearly reads over the sited art in new claim 136. (new) The multi-position reclining bed of claim 129, further including a plurality of surfaces with varying coefficients of friction on said bed surface whercin a first said

surface of high coefficient of friction grips said buttocks portion of said mattress, and a second said surface of low coefficient of friction allows back portion of mattress to slide along said back section.

15. Claim 123 is rejected under 35 USC 103(a) as being unpatentable over 005 in view of Zur and further in view of Johnston. Applicant's limitation in claim 144 (new); "wherein said footrest can be moved along length of calves section by said foot rest actuating mechanism" distinguishes over Johnston's; "footrests 7 are adjustable on the foot section 6 to adapt to the length of a particular patient 10 and in the illustrated example have a spring loaded engagement pins 87." The applicant's claimed foot rest actuating mechanism prevents the patient from having to move the foot rest to the end of the bed for sleeping and vice versa for sitting up.

16. Claims 124 , 127 rejected under 35 U.S.C. 103a) unpatentable over Johnston in view of Kleinwolterink. The applicant's novel device to lower a section of the bed to suspend the patient so that they can swing themselves to the side of the bed by themselves over their wheel chair or toilet or to a standing position by a separate attachment to the bed is clearly superior to the suggested combination.

The suggested combination requires a person to roll their wheel chair into Kleinwolterink's lifting device. However Johnston's patient cannot roll his bed into the lifting device, which is not a wheelchair. Even if the bed was self rolling it would be too wide to fit into the lifting device, which would then require modification to Johnston's device of widening as well as a deeper reach, requiring lengthening the cantilever support structure, and also increasing the height to accommodate the higher seating elevation, in order to be operable with a bed and to reach in from the foot end of the bed.

It would not be logical to combine Johnston and Kleintolterink deepen when a side entry to the bed is simpler and the present convention for lifting patients.

The patient would also require an assistant to roll the device over a toilet once lifted, unlike applicant's self operated drop and swing movement. The applicant's limitation "wherein said swing arm is attached to said supporting elements and said arm rests are attached to said swing arm" clearly distinguishes over the suggested combination of 2 separate devices, and produces the additional unexpected results of unassisted operation with a much simpler device that also functions as a desk and support to the arms and elbows of the patient for greater stability. The combination would also be inoperable unless the leg section of the bed was raised from the floor to allow the cantilever support structure to be rolled under it and the rest of the

bed. If Johnston's foot end support pedestal 8 had to be removed to allow clearance to roll under the bed, the bed would become unstable when the patient's weight comes to rest on the foot rests, causing the bed to teeter footward.

The suggested combination is a lifting device while applicant's novel approach to lower a section of the bed leaving the patient suspended in their original elevation is structurally distinct and novel.

SUMMARY

Applicant has amended the claims to overcome the Objections of the examiner, and presented arguments to delineate the present invention from the device shown in the prior art. It is respectfully submitted that the claims are in condition for allowance, such action is respectfully requested. If, for any reason this application is not believed to be in full condition for allowance, applicant respectfully requests the constructive assistance and suggestions of the Examiner pursuant to M.P.E.P. 2173.02 and 707.07(j) in order that the undersigned can place this application in allowable condition as soon as possible and without the need for further proceedings.

Respectfully submitted,

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